

REMARKS

The Office Action dated September 3, 2008, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Status of the Claims

Claims 1-15 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added. Claims 1-15 are currently pending in the application and are respectfully submitted for consideration.

Rejection under 35 U.S.C. § 102

Claims 1, 5, 8, 12 and 15 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Haikawa (U.S. Patent No. 5,378,969). The Office Action took the position on pages 2 and 3 that Haikawa discloses all of the features of the rejected claims. Applicants respectfully submit that Haikawa fails to disclose or suggest all of the features of the above-rejected claims. Reconsideration of the claims is respectfully requested.

Independent claim 1, from which claims 2-7 depend, recites a system for recognizing a shape of a staircase or other polyhedron based on an image input from photographic means, including at least one camera as the photographic means and region selection means for selecting a predetermined region to be processed further for detailed analysis within the image photographed by the at least one camera. The system also includes processing region setting means for obtaining a range image from the image obtained by the at least one camera and for setting a processing region upon the obtained

range image based on the selected region and polyhedron shape recognition means for recognizing the shape of one or more polyhedrons based on the range image within a set candidate range.

Independent claim 8, from which claims 9-14 depend, recites a method of recognizing a shape of a staircase or other polyhedron based on an image input from at least one camera, including selecting a predetermined region within the image photographed by the at least one camera, obtaining a range image from the image obtained by the at least one camera and setting a processing region upon the obtained range image based on the selected region. The method also includes recognizing the shape of one or more polyhedrons based on the range image within a set candidate range.

Independent claim 15 recites a computer program embodied on a computer-readable medium for recognizing shape of a staircase or other polyhedron based on an image input from at least one camera. The program is configured to control a processor to perform a process, including selecting a predetermined region within the image photographed by the at least one camera, obtaining a range image from the image obtained by the at least one camera and setting a processing region upon the obtained range image based on the selected region. The method also includes recognizing the shape of one or more polyhedrons based on the range image within a set candidate range.

As will be discussed below, Haikawa fails to disclose or suggest all of the features of the presently pending claims.

Haikawa generally discusses “a system which enhances visual recognition processing speed and accuracy in a mobile robot which recognizes distinctive or characteristic shapes in its navigation environment which are suitable for a visual recognition algorithm and recognizes its own current position from the position of the recognized shapes” (column 1, lines 9-15). The system discussed in Haikawa may include “first means for predesignating shape features of an object existing in the environment, second means for establishing an evaluation function defined at least with respect to a distance between the object and the mobile robot and an angle determined at least by a pair of shape features, and third means for selecting a pair of shape features among the shape features in accordance with the evaluation function to recognize a current position at which the mobile robot exists in the environment” (column 1, line 62, through column 2, line 3, of Haikawa).

Independent claim 1, as amended herein, recites, in part, “region selection means for selecting a predetermined region to be processed further for detailed analysis within the image photographed by the at least one camera”. Independent claims 8 and 15, which each have their own scope, recite similar features. The Office Action asserted on page 2 that column 5, lines 52-67, and column 6, lines 1-9, of Haikawa disclose these features. More specifically, the Office Action alleged that “features [sic] points are found for the whole image and then optimum feature points are ranked and further analyzed, while other candidate points are discarded.” Nothing is cited or found in Haikawa that discloses or suggests selecting a predetermined region, as claimed. Rather, Haikawa

discusses “calculating the visual field of the camera (vision sensor 32) at the estimated current position”, after which “shape feature points are screened” (see column 5, lines 47-53). It appears that this is performed to find shape feature points for a “whole object”, and as such, Haikawa does not disclose that a **predetermined region** of the visual field of the camera is selected.

Independent claim 1, as amended herein, also recites, in part, “processing region setting means for obtaining a range image from the image obtained by the at least one camera and for setting a processing region upon the obtained range image based on the selected region”. Independent claims 8 and 15, which each have their own scope, recite similar features. The Office Action asserted on pages 2 and 3 that column 6, lines 9-24, of Haikawa disclose these features. More specifically, the Office Action stated on page 3 that “the distances or ranges between the robot and the feature points is [sic] are calculated”. However, nothing is cited or found in Haikawa that discloses or suggests that a range image is obtained based upon a selected region, as claimed. Rather, in Haikawa, “the distance between the robot and each shape feature point is calculated” (column 6, lines 15 and 16). Per the above, Haikawa does not disclose selecting a predetermined region and as such, a range image is not obtained based upon the selected region.

Independent claim 1, as amended herein, further recites, in part, “polyhedron shape recognition means for recognizing the shape of one or more polyhedrons based on the range image within a set candidate range”. Independent claims 8 and 15, which each

have their own scope, recite similar features. The Office Action asserted on page 3 that Fig. 8 and column 6, lines 9-23 of Haikawa disclose these features. More specifically, the Office Action asserted that “Haikawa discloses recognizing and analyzing a staircase or polyhedron from the image data of the captured environment”. However, this ignores the claimed feature that polyhedrons are recognized **within a set candidate range**, regarding which Haikawa is completely silent. In fact, the only mention of “range” in Haikawa is in discussing that robots may have a wide range of types. While the Office Action stated that the “distances or ranges” between the robot and the feature points are calculated, this does not correspond with a set candidate range, as claimed.

Claims 5 and 12 depend from independent claims 1 or 8 and add further features thereto. Thus, the arguments above with respect to the independent claims also apply to the dependent claims.

Per the above, Haikawa fails to disclose or suggest all of the features of the above-rejected claims under 35 U.S.C. § 102(b). Accordingly, it is respectfully submitted that the rejection is overcome and respectfully requested that the rejection be withdrawn.

Rejection under 35 U.S.C. § 103

Claims 2-4, 6, 7, 9-11, 13 and 14 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Haikawa in view of Tatsuto (JP 3,192,736). Applicants note that Tatsuto was submitted in the IDS filed in the present case on March 22, 2004. Claims 2-4, 6, 7, 9-11, 13 and 14 depend from independent claims 1 or 8 and add further features thereto. Nothing is cited or found in Tatsuto, which generally

discusses “what recognizes the object which projects from road surfaces, such as stairs” (paragraph [0001]), that overcomes the deficiencies of Haikawa discussed above with respect to the independent claims. Thus, the arguments above with respect to the independent claims also apply to claims 2-4, 6, 7, 9-11, 13 and 14.

Accordingly, it is respectfully submitted that the rejection is overcome and respectfully requested that the rejection be withdrawn.

Conclusion

For at least the reasons presented above, it is respectfully submitted that claims 1-15, comprising all of the currently pending claims, patentably distinguish over the cited art. Accordingly, it is respectfully requested that the claims be allowed and the application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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